

Claims

1. A method of re-hydrating crop for baling, comprising:
 - (a) providing a dry crop;
 - (b) continuously generating a quantity of steam;
 - (c) continuously generating a quantity of hot gas;
 - (d) joining said steam and hot gas together to form a stream of steam and hot gas;
 - (e) conveying the stream of steam and hot gases to a location adjacent the crop to be re-hydrated; and
 - (f) distributing the stream of steam and hot gases onto the crop.
2. The method, as set forth in claim 1, wherein said step of joining includes mixing said steam and hot gases together into a substantially homogenous mixture.
3. The method, as set forth in claim 1, wherein said step of joining includes enveloping said stream of steam with said stream of hot gases so as to create an insulating barrier about said stream of steam.
4. A system for re-hydrating dry crop to be baled, comprising:
 - (a) a steam generator having a steam outlet;
 - (b) a steam distribution system coupled between said steam outlet and a location adjacent the dry crop to be re-hydrated; and
 - (c) a source of heated gas coupled to said steam distribution system adjacent said steam outlet, with said heated gas being no greater than a minimum temperature required for maintaining said steam in its gaseous state when it comes into contact with said dry crop to be re-hydrated.
5. The system for re-hydrating crop, as defined in claim 4, wherein said source of heated gas is heated air.
6. The system for re-hydrating crop, as defined in claim 5, wherein said steam generator includes a combustion chamber; a burner coupled to the combustion chamber for causing a flame for creating hot gas; a heat exchanger coupled to said combustion chamber for receiving hot gas; a source of air being coupled to said heat exchanger so as to create said heated air.

7. The system for re-hydrating crop, as set forth in claim 4, wherein said heated gas is exhaust gas from said steam generator.

8. The system for re-hydrating crop, as set forth in claim 7, wherein said distribution system includes a mixer located adjacent said outlet for mixing said steam and heated gas.

9. The system for re-hydrating crop, as set forth in claim 7 wherein said steam generator is a direct-fired steam generator including:

- (a) a combustion chamber having opposite first and second ends;
- (b) a burner extending into said first end of said combustion chamber;
- (c) an air/fuel conveying tube coupled to said burner, whereby a flame will result when an air/fuel mixture in said conveying tube is ignited to thereby result in the creation of said hot gas;

- (d) said combustion chamber having a wall exposed to said hot gas;
- (e) a water supply conduit coupled for conveying water to flow over said wall of said combustion chamber, whereby water conveyed to said wall is changed into steam which becomes combined with said hot gas at said second end of said combustion chamber; and

- (f) said distribution system being coupled between said second end of said combustion chamber and a location adjacent said crop for conveying a said steam combined with said hot gas to said crop.

10. The system for re-hydrating crop, as set forth in claim 9, wherein said distribution system includes a mixer coupled adjacent said second end of said combustion chamber for mixing said steam and said hot gas.

11. A system for re-hydrating dry crop to be baled, comprising:

- (a) a steam generator including a furnace including a combustion chamber having first and second ends;

- (b) a burner being coupled to said first end of said combustion chamber;
- (c) a fuel supply conduit being connected to said burner, whereby when fuel is present and ignited a flame will result in said combustion chamber thereby creating hot gas;

- (d) a boiler including a water reservoir located adjacent said combustion

chamber and having a tube arrangement located in said reservoir and coupled to said second end of said combustion chamber for conveying hot gas from said combustion chamber through said water reservoir so as to cause the formation of steam;

(e) said water reservoir having a steam outlet;

(f) a heat exchanger coupled to said tube arrangement for receiving said hot gas;

(g) a source of air coupled to said heat exchanger and to said steam outlet for supplying heated air for being mixed with said steam; and

(h) a steam distribution system coupled between said outlet and a location adjacent said crop to be re-hydrated with said heated air being at no more than a minimum temperature required for maintaining said steam in a gaseous state at least until it reaches said location adjacent said crop to be re-hydrated.

12. A system for re-hydrating a dry crop to be baled comprising:

(a) a steam generator for generating steam;

(b) a source of hot gas;

(c) a steam and hot gas distribution system being coupled between a location adjacent said crop to be re-hydrated and said steam generator and source of hot gas;

(d) said steam and hot gas distribution system being so constructed and arranged that said hot gas is disposed in an insulating and energy transfer relationship to said steam; and

(e) said source of hot gas being at a temperature no greater than a minimum temperature required for maintaining said steam in a gaseous state at a time when the steam comes into contact with said crop.

13. The re-hydrating system, as defined in claim 12, wherein said steam and hot gas distribution system includes a plurality of nozzles having discharge ends positioned at said location adjacent said crop to be re-hydrated and each nozzle including:

(a) concentric inner and outer tubes respectively coupled to said steam generator for receiving said steam from said steam generator, and to said source of

hot gas for receiving hot gas, whereby said hot gas will envelope and insulate said steam as the steam and hot gas exit said discharge end of a respective nozzle.